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Bulk material cooler for cooling hot material to be cooled

CLAIMS

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1. A bulk material cooler having a cooling grate which carries the material to be cooled, such as hot cement clinker for example, and transports the material to be cooled, through which a cooling gas flows, from the charging end for the material to be cooled to the discharging end for the material to be cooled,
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be cooled,
characterized by the following features:

15 a) the cooling grate is made up of a number of adjacently arranged elongate bottom elements (10 to 12) which extend in the longitudinal direction of the cooler, are movable in a controlled manner at least partly independently
20 of one another between a forward-travel position (13) in the transporting direction of the material to be cooled and a return-travel position (14), so that the material to be cooled (15) is conveyed through the cooler step by step
25 in accordance with the walking floor conveying principle;

b) the bottom elements (10 to 12) have, seen in cross section, an upper side which carries the material to be cooled and allows the cooling gas
30 (16) to pass through from underneath upward, and, at a distance from said upper side, a closed underside (17) preventing material to be cooled from falling through the grate;

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5 c) the underside (17) of the bottom elements has a number of cooling-gas inlet openings (18), distributed over the length, to aerate the bottom elements and consequently the cooling grate.

10 2. The bulk material cooler as claimed in claim 1, characterized in that the upper sides of the bottom elements (10 to 12) that are longitudinally movable individually and/or in groups in each case comprise
15 gabled-roof-shaped V profiles (19, 20) arranged spaced apart mirror-symmetrically opposite one another, but offset in relation to one another, the V legs of which engage in one another with an intermediate space, which latter forms a labyrinth for the material to be cooled and for the cooling air (16).

20 3. The bulk material cooler as claimed in claim 1 or 2, characterized in that webs (21a to 21c) lying transversely in relation to the transporting direction of the material to be cooled are arranged on the upper side of the bottom elements (10 to 12) to fix the lowermost layer of bulk material (15)
25 and to avoid relative movement of this lowermost layer and the bottom element.

30 4. The bulk material cooler as claimed in claim 1, characterized in that respectively overlapping longitudinal webs (22, 23) are arranged on the opposite longitudinal sides of the adjacent bottom elements that are movable in a controlled manner, with a horizontal sealing gap tending toward zero being formed in each case.

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5. The bulk material cooler as claimed in claim 1, characterized in that, seen over the length and over the width of the bulk material cooler, the cooling grate is made up of a number of bottom element modules, the bottom element modules respectively of a row that are arranged one behind the other in the transporting direction of the material to be cooled being coupled.
6. The bulk material cooler as claimed in claim 1 or 5, characterized in that the driving of the individual bottom elements of the bottom element modules, to move them between the forward-travel position (13) and the return-travel position (14), takes place from underneath the cooling grate, the driving taking place in such a way that the connecting elements of the bottom element modules lying one behind the other respectively of a row being subjected in particular only to tensile stress.